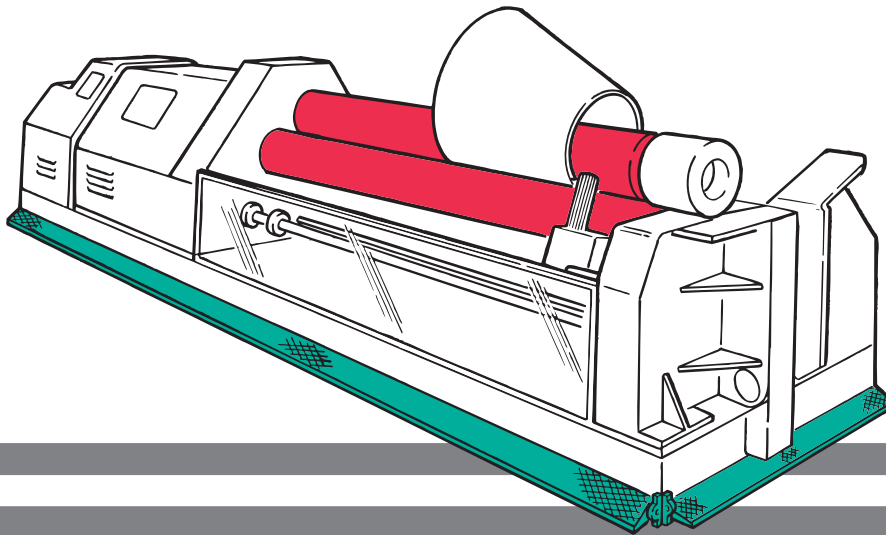


2.4.14 Calender

Legislative Decree 81/08 App. V and VI, Presidential Decree 459/96 App. I



HAZARD

PROTECTION

Machine for bending metals by passing them through pairs of superimposed cylinders.

2.4.14.1 HAZARDS

Crushing, dragging, entanglement

The infeed area of the cylinders (or rolls) is the most hazardous and should be properly protected along its entire length, with a guard to prevent the worker's hands or other body parts being caught and dragged. This protection must be made up of fixed guards (see "Fixed guards" in 2.2.3.2) or movable interlocked guards (see "Movable guards" in 2.2.3.2). However, as these types of guard are not always applicable for machining needs, the machine must be fitted with a cable or bar device surrounding the hazardous area that the operator can activate from any position with an easy manoeuvre to stop the cylinders quickly. The cable or bar (see 2.2.6.4 "Emergency stop") must be connected to a safety limit switch (see 2.2.5.1 "Interlock devices") to stop the machine if activated by the operator. In calenders with particularly serious risks, the emergency stop device (see 2.2.6.4 "Emergency stop") using cable or bar must stop the cylinders immediately (self-braking motor) and at the same time invert the motion or move the cylinders away. In addition, as required for safety purposes and if technically possible, workers must be provided with and use appropriate tools so that they can carry out operations without moving their hands towards the hazardous area.

Contact with motion transmission equipment

Motion transmission equipment must be fully enclosed with a fixed guard (see "Fixed guards" in 2.2.3.2) or movable interlocked guard (see "Movable guards" in 2.2.3.2) if frequent access is required to the protected area (i.e. more than once a shift).

2.4.14.2 CONTROL EQUIPMENT

Starting

The only way to start the machine is to use specific control devices (see 2.2.6.1 "Starting") that are easy to recognise and are protected against the risk of being accidentally activated (e.g. dual-action lever, pushbuttons with guard ring, shrouded pedals, etc.).

Unexpected restart

Spontaneous restarts of the machine after power is restored must be prevented using a specific device (see 2.3 "Machine electrical systems").

Stopping

The machine must have a control device (see 2.2.6.3 "Stopping") to stop it safely.

Emergency stop

Calenders must be fitted with at least one emergency stop (see 2.2.6.4 "Emergency stop") that is easily accessible, placed by the control stations and other operating points, and which, after being activated, stops the machine putting it into a safe condition. It can be a red mushroom pushbutton or a bar or cable.

2.4.14.3 ERGONOMICS

Positioning

The machine must be installed so that there is free access to the work area even when setting, loading and unloading devices, etc. are being used (for example, lifting devices).

2.4.14.4 OCCUPATIONAL HEALTH AND SAFETY

Noise

Find out the noise levels to which staff are exposed when using the machine and follow the employer's instructions.

2.4.14.5 PERSONAL PROTECTIVE EQUIPMENT

The machining work must be assessed carefully so that the use of PPE can be defined:



Gloves (see 5.6.4 "Gloves giving protection from mechanical risks") protecting against mechanical risks and which are waterproof when oils are used. Gloves can be a serious entanglement hazard while the rolls are rotating.



Safety shoes (see 5.7 "Foot protection") with protective toe cap (S1).

2.4.14.6 OPERATING INSTRUCTIONS

The machine must come with a manual, in Italian, explaining correct use and maintenance, including a programme of periodic inspections.

2.4.14.7 OCCUPATIONAL HEALTH AND SAFETY ACTIONS

Before use

- Read the Operating Instructions and be trained on using the machine safely, especially on how to secure and hold the sheet metal.
- Check that the guards (see 2.2.3 "Guards") and safety devices (see 2.2.5 "Safety devices") are present and positioned correctly.
- Check that the guard interlock systems work (see 2.2.5.1 "Interlock systems").
- Check that the emergency stop button works (see 2.2.6.4 "Emergency stop").
- Check that the emergency stop cable (see 2.2.6.4 "Emergency stop") is correctly tensioned along its whole length, so that the cylinders stop with minimum contact with it.
- Check that the top roll is fully engaged in the sliding support.
- Wear clothes that cannot become entangled with the hazardous moving parts on the machine.
- Do not wear scarves, necklaces, bracelets, watches or rings and tie up long hair.
- Wear the personal protective equipment (PPE) shown in this data sheet.

During use

- Keep the guards on the machine positioned correctly.
- Do not override or tamper with the safety devices. If they have to be deactivated for a specific job, other safety measures must be adopted immediately, such as very slow machining speed and hold-to-run controls.
- Adjust the pinch (lower roll) to get the desired ferrule diameter.
- Interrupt the rotation when the sheet metal loses the support of the front roll.
- Never open the pinching roll when securing the ferrule.
- Place the ferrule on a suitable support or special container.
- When inserting the sheet metal, calendering and removing the ferrule, do not remain inside the operating areas.
- When the sheet metal is loaded with a bridge crane, the harnesses must stay attached while there is a risk of the sheet metal coming out of the cylinders.
- Report any malfunctions or faults promptly to the supervisor.

After use

- Switch off the machine.
- To check the calendering quality, do not climb on the rolls even when the machine is stopped.
- Check the shape of the ferrule with templates kept outside the machine and only when the machine is stopped.
- Leave the area around the machine (especially the workstation) clear and tidy.
- Reactivate any deactivated guards.